

Micro Flash

Electronic flash equipment has long ago proved its usefulness as a light source for conventional photography of high-speed phenomena. When applied to photomicrography, however, results were often unsatisfactory because the improvised mounting of the flash tube did not meet the requirements of illumination theory and led to badly focused results lacking in contrast. The actual size of the flash tube made it difficult to achieve an optically correct mounting while at the same time providing pilot illumination; the equipment was inconvenient to operate and not very powerful.

The new Microflash Equipment

meets the requirements of modern scientific techniques and provides the basis for the photography of

- ▶ **Living objects** such as microfauna and microflora, bacteria, movements of ciliae, flagella, etc.
- ▶ **Moving objects** in fluid flow and molecular motion, such as emulsions, dispersions, etc.
- ▶ **Any solid objects** if extended exposure time results in poor definition due to vibration of the equipment
- ▶ **Crystallisation and melting phenomena** of chemical substances (Kofler Hot Stage)
- ▶ **Thermal transformations** in metallic or non-metallic materials at high temperatures (VACUTHERM micro furnace)
- ▶ **Several phases in the movement** of an object recorded on the same photograph (multi-exposure method)
- ▶ **Macro objects** such as surgical specimens, small components, entomological objects, etc., using low-power objectives, close-up lenses and stereo microscopes.

The new Microflash Equipment

has a powerful light output, is easy to operate and can also be used to prepare extended series of photographs and in time-lapse cinematography.

The new Microflash Equipment

combines all the advantages of the flash technique:

continuous readiness for photography
high flash energy
short illumination time
daylight colour temperature

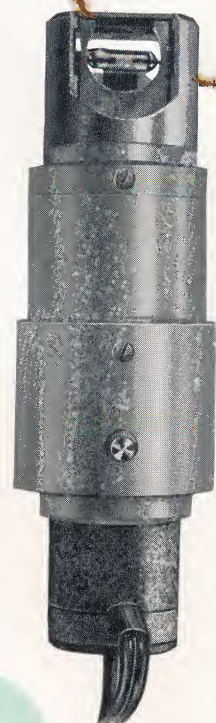
with the special requirements of microscopy.

Readiness for Photography within about 8 seconds from switching on; subsequent flashes can follow at intervals of approximately 3 seconds. The number of flashes which can be produced consecutively is effectively unlimited.

The Flash Energy of either 18 W-sec or 36 W-sec is fully utilised through the micro flash tube and the optical arrangement of the equipment, ensuring uniform illumination of the image and sufficient light output not only for bright ground but also for dark ground, phase contrast and polarized light work.

The Illumination Time of the flash is of the order of $\frac{1}{1000}$ sec and has been chosen so as to produce a sharp image of virtually all objects despite their movement while still avoiding any disturbance due to short-time effects.

The Colour Temperature of about 6000° K permits the use of daylight colour film. This makes it possible to combine micro, macro and normal photographs on a single film as is often desired in practice. The image is completely free from colour distortion in all ranges even without the use of conversion filters.



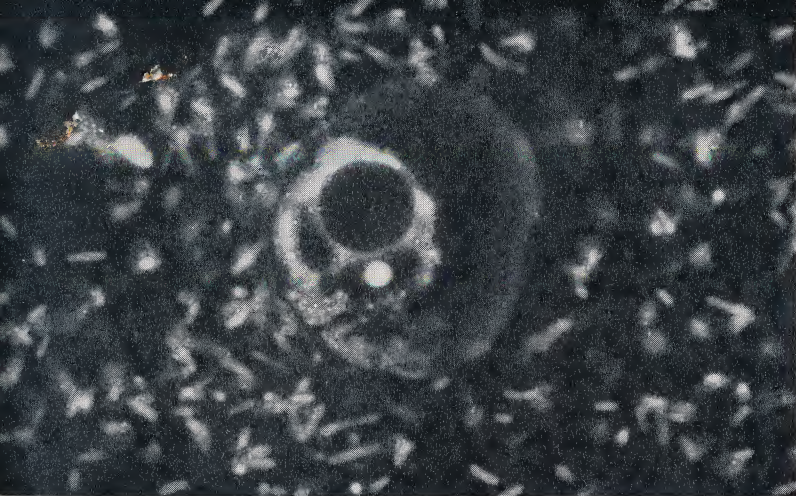
Control Unit

This neat self-contained unit carries all the electrical components required to control the flash voltage and operates without maintenance. A red light lights up after the mains supply has been switched on; a green light indicates that the equipment is ready for flashing.

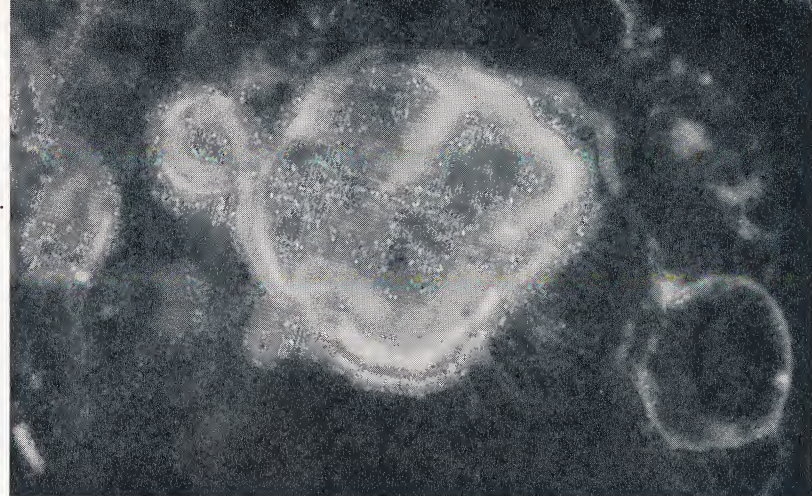
The flash energy is maintained constant through the use of a fully automatic relay system irrespective of the number of flashes, thus ensuring uniform illumination for all exposures. Two values of the flash energy can be selected, corresponding to different illumination powers. The flash tubes have a life of 1200 flashes at full power (36 W-sec) and some 3000 flashes at half power (18 W-sec).

The flash is triggered through the synchronising contact on the camera shutter, or alternatively by the trigger button on the control unit when using the multiflash method.





Amoeba in Hay Infusion, Anoptral contrast 1000×



Ciliated Cell in bronchial secretion, Anoptral contrast 1500×

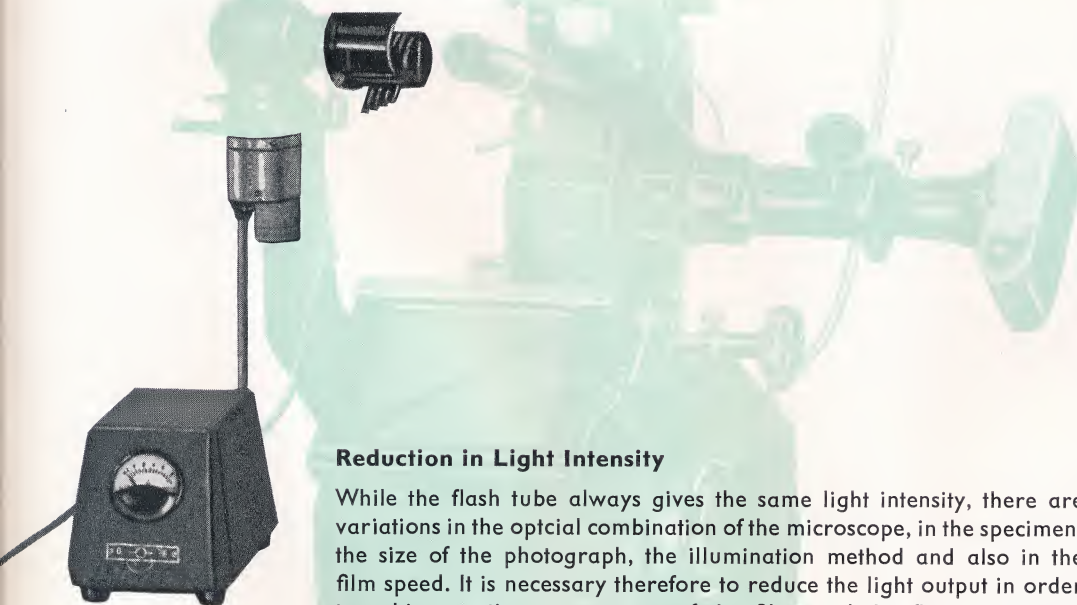
Flash Tube Holder

In addition to the flash tube the holder carries a 15 W low-voltage lamp which provides pilot illumination for observing the image immediately before and after the exposure. It also carries an optical system which produces a virtual image of the pilot lamp filament at the location of the flash tube, i.e. the illumination points of the two light sources coincide in practice. When Köhler illumination has been set up accurately with the low-voltage lamp in the usual way, the flash tube is automatically adjusted to the same position and produces a sharp and brilliant photograph without any further manipulation.

The flash tube holder fits into the carrier of our long-established 30 W low-voltage lamp and can therefore be used

- in the **ZETOPAN** Large Research Microscope
- in the **Lux U** Universal Lamp Housing
- in the **BINOLUX** Twin-Lamp Unit
- in the **Me F** Universal Camera Microscope
- in the **MERCURIUS** Twin-Lamp Unit
- and in the **Lux FNI** Low-Voltage Illuminator.

It can be supplied for use with any existing instrument of the above types. The Lux FNI illuminator with its table stand can be used with microscopes of other manufacture.



Reduction in Light Intensity

While the flash tube always gives the same light intensity, there are variations in the optical combination of the microscope, in the specimen, the size of the photograph, the illumination method and also in the film speed. It is necessary therefore to reduce the light output in order to achieve optimum exposure of the film, and the flash equipment incorporates a carefully selected series of neutral filters covering seven exposure steps. The filters are prepared by a special process and can also be used for colour film since they are completely free from colour distortion.

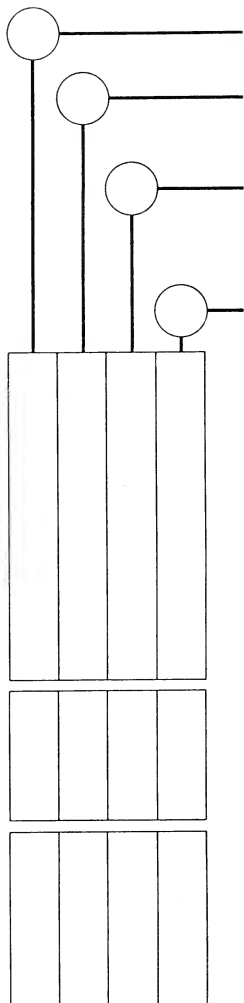


Exposure Meter

The correct filter for reducing the light intensity can be determined by means of the Reichert REMIPHOT Exposure Meter or alternatively by trial and error. Unlike other exposure meters or automatic exposure systems the REMIPHOT carries a scale for the direct reading of exposure times. Using the pilot lamp as a comparison light source, filters are inserted until a particular exposure time is indicated on the scale of the REMIPHOT, in the case of black-white film 4 seconds for example. This simple adjustment automatically selects the correct filters for the microflash too, so that the correct film exposure is obtained immediately.

MICROFLASH OUTFITS

Specifications

	For the "ZETOPAN" Research Microscope with "Lux FNI" low-voltage illuminator	VAABY	329.00
	For the "ZETOPAN" Research Microscope with "Lux U" universal lamp housing and holder for low-voltage lamp	VAAEV	329.00
	For the "Me F" Universal Camera Microscope with "Lux FN" low-voltage illuminator, or "Lux U" universal lamp housing and holder for the low-voltage lamp	VAAFO	318.00
	For the "Lux FNI" low-voltage illuminator on table stand	VAAGE	318.00
	Flash tube holder, flash tube, pilot lamp holder with condenser, plastic protection cap. • Lamp base • Low-voltage bulbs, 15 W (6 V, 2.5 A) on pre-centred base (2 off) • Control unit for a.c. supply only, when ordering please state voltage of the mains • Synchronising cable.		
	Filter slide with neutral filter N 1, green filter G 1 and green filter G 2		
	Filter slide with neutral filter N 2, neutral filter N 4 and neutral filter N 6		
	Filter slide with neutral filter N 2, neutral filter N 4 and neutral filter N 6		
	Filter carrier, 5 filter holders with green filter, neutral filter N 1, neutral filter N 2 and neutral filter N 4		
	Accessories		
	Condenser front lens for low-power photomicrography. For illuminating the field in incident light with the Neu-Polar f = 100 mm	KAABA	10.00
	Spares		
	Flash tube	VAAIR	16.00
	Low-voltage bulbs, 15 W (6 V, 2.5 A) on pre-centred base, 2 off	UNA EH	9.00
	Synchronising cable	VAANA	5.00

included in complete outfit
available as accessory
available as spare

The information on this page is obsolete -
please request our quotation.

WILLIAM J. HACKER & CO., INC.

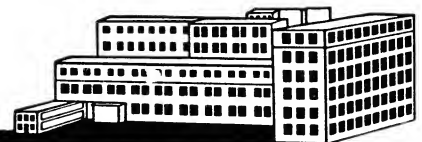
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C. REICHERT OPTISCHE WERKE AG



WIEN XVII, HERNALSER HAUPTSTRASSE 219

REICHERT

Microflash Equipment

1) For the "Zetopan" Research Microscope with "Lux FNI" Low Voltage Illuminator

VAABY	Flash tube holder #7572, flash tube #7573, pilot lamp holder with condenser, plastic cap, lamp holder #1112, 2 low-voltage bulbs #7714, 15 Watts, 6 V., 2.5 Amps., pre-centered, control unit #7574 for 110/120 Volts AC, voltage selector for 110, 150, and 220 Volts, synchronization cable #7575. Filter slide #7954 with neutral filter N1 #8187, green filter G1 #8185, and green filter G2 #8186. Filter slide #7954 with neutral filter N2 #8188, neutral filter N4 #8189, and neutral filter N6 #8190.	\$ 477.70 =====
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2) For the "MeF" Metallograph and Universal Camera Microscope with "Lux FN" Low-Voltage Illuminator

VAAFO	Flash tube holder #7572, flash tube #7573, pilot lamp holder with condenser, plastic cap, lamp holder #1112, 2 low-voltage bulbs #7714, 15 Watts, 6 V., 2.5 Amps., pre-centered, control unit #7574, for AC only, voltage selector for 110, 150, and 220 Volts, synchronization cable #7575. Filter attachment #7883, 5 filter holders with green filter #8008, neutral filter N1 #8187, neutral filter N2 #8188, and neutral filter N4 #8189.	461.40 =====
KAABA	Condenser front lens #7576, for low-power photomicrography. For full field illumination in incident light using New Polar f/100 mm macrophotography equipment	15.00

3) Micro Flash Unit and Low Voltage Illuminator on Table Stand for REICHERT Microscopes "Biozet", "RC", and microscopes other than Reichert:

VAAGE	Flash tube holder #7572, flash tube #7573, pilot lamp holder with condenser, plastic cap, lamp holder #1112, 2 low-voltage bulbs #7714, 15 Watts, 6 V., 2.5 Amps, precentered, control unit #7574, for AC only, voltage selector for 110, 150, and 220 Volts, synchronization cable #7575. Filter attachment #7883, 5 filter holders with green filter #8008, neutral filter N1 #8187, neutral filter N2 #8188, and neutral filter N4 #8189	461.40
LUIISA	Low-voltage microscope lamp "Lux FNI", with reflector, field iris diaphragm, focusing collector, 5 filter holders, frosted daylight filter #8035, neutral filter NG 3/2 mm, green filter VG 9/2 mm, yellow filter GG 11/2 mm, table stand, cord and plug	135.90
MALZU	2 low-voltage bulbs, 6 V., 5 A., precentered	9.00 ea. 18.00
TRADOM	Continuously regulating transformer, without meter, for 110/120 Volts, 60 cycles, AC, cord and line plug	25.00
MICFLA	Complete Micro Flash Unit and Low Voltage Illuminator "Lux FNI"	640.30

ACCESSORIES AND SPARE PARTS

VAAIR	Flash tube #7573	24.20
UNAEH	Tungsten filament bulb 6 V., 5 A.	7.30
VAANA	Synchronization cable #7575	7.60
BEGEF	Filter slide #7954, 5 mm thick, with 5 apertures	12.00
LUIISK	Filter attachment #7883, with 5 filter holders	25.70
OABAT	Neutral filter N1 #8187, 50% transmission	7.60
OABEM	Neutral filter N2 #8188, 25% transmission	7.60
OABOV	Neutral filter N4 #8189, 6.4% transmission	7.60
OABRU	Neutral filter N6 #8190, 1.6% transmission	7.60
OABSO	Green filter G1 #8185, VG 9/1.5 mm	6.00
OABUA	Green filter G2 #8186, VG 9/1.5 mm + N1	9.00
NEROS	Green filter #8008, VG 9/2 mm	4.60

PRICES IN EFFECT AT TIME OF SHIPMENT WILL APPLY - E. & O. E.

TERMS: FOB CALDWELL, N.J. - 1% 10 DAYS, NET 30 DAYS

PRICES AND SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE